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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/587,741

07/27/2006

Remo Meister

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THE WEBB LAW FIRM, P.C.
700 KOPPERS BUILDING
436 SEVENTH AVENUE
PITTSBURGH, PA 15219

EXAMINER

RAHIM, AZIM

ART UNIT

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3744

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/587,741	Applicant(s) MEISTER, REMO	
	Examiner AZIM RAHIM	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/4/2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 04 May 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 31-33 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 31 appears to repeat limitations of claim 27, claim 32 appears to repeat limitations of claim 28, and claim 33 appears to recite limitations similar to claims 29 and 30.

2. Claims 28 and 31-33 are objected to because of the following informalities: Regarding claim 28, in lines 1-2, the recitation “*the mass flow*” should be corrected to recite –*a mass flow*--; and in line 3, the recitation “*a parallel*” should be corrected to recite –*parallel*--. In claim 31, line 6, the recitation “*heat exchanger*” should be corrected to recite –*the heat exchanger*--. In claim 32, the recitation “*a parallel*” should be corrected to recite –*parallel*--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 27-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claims 27 and 31, the limitation “*a compressor, a condenser, an*

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injection valve, and an evaporator, which is passed through on its secondary side by a secondary medium to be cooled down” is unclear in context, since it is not entirely clear as to whether or not “its” refers to the compressor, condenser, injection valve or the evaporator. For examination purposes, the aforementioned limitation will be interpreted as being **--a compressor, a condenser, an injection valve, and an evaporator, in which from a secondary medium passes through a secondary side of the evaporator--**. Regarding claim 30, the limitation “*to additionally keep the temperature of the refrigerant at the entrance of the injection valve*” is somewhat unclear in context, since it is not entirely clear as to how a temperature of a refrigerant can be kept. For examination purposes, the aforementioned limitation will be interpreted as being **--to additionally keep the temperature of the refrigerant at the entrance of the injection valve constant--**. Regarding claim 31, the limitation “*which heat exchanger is passed the by said refrigerant on its primary side, and by said cooled down secondary medium on its secondary side*” is somewhat unclear, in context, since it is not entirely clear as to what “its” refers to. For examination purposes, the aforementioned limitation will be interpreted as being **--in which said refrigerant passes through the primary side of the heat exchanger, and in which said cooled down secondary medium passes on the secondary side of the heat exchanger--**.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 27-29, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (Tanaka, US 6,116,035) in view of Pomme (US 6,425,262).

Regarding claims 27 and 31, Tanaka discloses a refrigeration plant and operating method (referring to figure 45), which comprises in a refrigeration circuit (A) a compressor (11), a condenser (14), an injection valve (18b) and an evaporator (the combination of cooling heat exchanger 15 and cold heat source heat exchanger 2), which is passed through on its secondary side (2) by a secondary medium (via refrigerant circuit B) to be cooled down, whereby a heat exchanger (the combination of heating heat exchanger 12 and hot heat source heat exchanger 1) is provided between a feed line (the line at the bottom of cold heat source heat exchanger 2) for the secondary medium and a refrigerant line leading to said injection valve (the line at the top of cooling heat exchanger 15). However, Tanaka fails to disclose that the temperature of the refrigerant at the entrance of the injection valve is kept constant. Pomme teaches the concept of using a reservoir (5) to maintain a subcooling temperature of a condenser (3) constant (see abstract and figure 3). It is noted that the temperature of the refrigerant upstream of expansion valve 6 would also be kept constant since the temperature of the refrigerant in the condenser would be kept constant. Therefore, it would have been obvious to one having ordinary skill in

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the art at the time the invention was made to have modified the refrigeration plant of Tanaka to maintain the temperature of the refrigerant entering the injection valve constant as taught by Pomme in order to control the superheat of the refrigerant leaving the evaporator, thus maintaining operational effectiveness.

Regarding claims 28 and 32, Tanaka further discloses that the mass flow of the cooled-down secondary medium is at least partly passed through the heat exchanger in counter-flow with respect to the refrigerant flow (illustrated in figure 45) by means of a first valve (the valve disposed above cold heat source side heat exchanger 2).

8. Claims 29, 30 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka as modified by Pomme as applied to claims 27 and 31 above, and further in view of Aflekt et al. (Aflekt, US 7,574,874).

Regarding claims 29, 30 and 33, Tanaka as modified by Pomme teach all the limitations of the claimed invention, but fails to teach that the refrigerant leaving said evaporator is passed through an internal heat exchanger, and whereby a second valve is provided between said refrigerant line leading to said injection valve and said internal heat exchanger, such that a predetermined part of the refrigerant mass flow is passed through said internal heat exchanger, while the remaining mass flow is directly conducted to said injection valve, to additionally keep the temperature of the refrigerant at the entrance of the injection valve. Aflekt teaches (referring to figure 3) an internal heat exchanger (5) positioned downstream of an evaporator (4), and a three-way valve (6'') positioned between an injection valve (expansion valve 3) and a refrigerant line leading to the internal heat exchanger (the line at the bottom of the three-way valve). It is

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noted that a user would know the predetermined amount of refrigerant flow passing through the three-way valve based on the specifications of the refrigerant circuit of Aflekt. Also, the three-way valve would inherently aid in keeping the temperature of the refrigerant entering the expansion valve constant, since some of the refrigerant is allowed to bypass the expansion valve. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the refrigerant plant of Tanaka as modified by Pomme to include the internal heat exchanger and three-way valve as taught by Aflekt in order to control the superheat of the compressor, thus ensuring efficient operation of the refrigerant plant.

Response to Arguments

9. Applicant's arguments with respect to claims 27-33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AZIM RAHIM whose telephone number is (571) 270-1998. The examiner can normally be reached on Monday - Thursday 7am - 2pm EST and Friday 7am - 11am EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules or Cheryl Tyler can be reached on 571-272-6681 and 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. R./
Examiner, Art Unit 3744
7/17/2010

/Frantz F. Jules/

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Supervisory Patent Examiner, Art Unit 3744